APPENDIX 2 PROVINCIAL AND NATIONAL FRAMEWORKS WITH IMPLICATIONS FOR MANAGING SULPHUR AND NITROGEN EMISSIONS.

Table 1. Description of Provincial and National Management Frameworks that have implications for management of S and N emissions in Alberta

Framework	Document	Jurisdiction and Date Issued	Goal	Pollutants/ Emissions Managed	Implementation Agency	Compliance Assessment	Management Actions if Non-Compliance
Canada-Wide Acid Rain Strategy for Post 2000	The Canada-Wide Acid Rain Strategy for Post-2000: Strategy and Supporting Document http://www.ccme.ca/assets/pdf/1998_acid_rain_strategy_e.pdf	Federal/ Provincial/ Territorial governments 1998	To meet the environmental threshold of critical loads for acid deposition across Canada and keeping the clean air clear in areas that are below the critical loads	Precursors of acid deposition (SO_2 and NO_x) SO_2 emission reduction in eastern Canada	Federal, Provincial and Territorial governments	Annual progress report on emissions and forecasts, compliance with international commitments on SO_2 and NO_x emissions, and progress in implementing the Strategy	N/A
Alberta's Approach to Pollution Prevention and Conservation	http://www3.gov.ab.ca/env/waste/pprevention/index.html	Alberta 2002	Promotes continuous improvement through operational and behavioural changes.	Waste from small and medium-sized enterprises	Small and medium-sized enterprises	N/A	N/A
Provincial PM & Ozone Management Framework	Guidance Document for the Management of Fine Particulate Matter and Ozone in Alberta	Alberta 2003	Minimize risk to human health and the environment, balancing the desire to achieve the best health and environmental protection possible in the relative near term and the	Ambient $PM_{2.5}$ and ozone $PM_{2.5}$ management action thresholds are 15, 20, and 30 µg/m³. CWS metric Ozone management action thresholds are 58 and 65 ppb, CWS metric[2], with a	AENV, supported by EC, airshed zones, contributing emitters	Monitoring of ambient ozone and $PM_{2.5}$	AENV and/or affected airsheds - develop a plan within 2 years to reduce, or prevent further increase in ozone, or - implement surveillance of the emissions causing non-compliance

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			feasibility and costs of reducing the pollutant emissions that contribute to elevated PM and ozone	surveillance threshold at the discretion of AENV KCAC/CI principles PM and precursors of PM and ozone (potentially NO_x, SO_2, NH_3, VOCs, CO, combustion particulate emissions)			
CEMA (Oil Sands Area) Ozone Management Framework	Ozone Management Framework for the Regional Municipality of Wood Buffalo	Regional Municipality of Wood Buffalo 2006	Protect human health and vegetation from human-caused ground-level ozone	Ambient ozone concentrations, as per the provincial PM and ozone framework Precursors to ozone (NO_x, VOCs, CO	AENV, supported by EC, WBEA, AEUB, and contributing emitters	Monitoring of ambient ozone and precursors Trend analysis and modeling to predict possible future non-compliance	Consistent with provincial framework
CEMA (Oil Sands Area) Acid Deposition	Recommendations for the Acid Deposition Management Framework for the Oil Sands Region of North-Eastern Alberta	Regional Municipality of Wood Buffalo 2004	To manage acid deposition from industrial activity to maintain the chemical characteristics of soils and lakes to avoid adverse effects on ecosystems, plants, or animals in the management area	Deposition of acidifying substances (NO_x and SO_2) Management objectives, defined in terms of chemical change in soils and lakes, are not exceeded: No significant trend in monitored soil or lake chemistry Specified maximum model-predicted change within 15 and 30 years to selected chemical parameters of soils and lakes	AENV and/or regional stakeholders, including contributing emitters	Monitoring of chemical change related to acid deposition in soils or lakes Modeling to predict future change in soil or lake chemistry related to acid deposition	Regional stakeholders to develop a plan within 2 years to reduce, or prevent further increase in, deposition, with a regulatory backstop if stakeholders cannot reach agreement within 2 years

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EUB Flaring, Venting and Incinerating Requirements	Current Requirements: EUB Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting http://www.eub.ca/docs/documents/directives/Directive060.pdf	Alberta Original Guide 60 was issued in July 1999 and came into effect in January 2000. The companion Updates and Clarification was issued in February 2001. The new Directive was issued in November 2007.	Reduce the volume of natural gas that is flared, incinerated, and vented. Flaring, venting and incinerating must also be conducted in a manner that ensures public safety and protection of the environment.	Vented hydrocarbons, smoke and incomplete combustion emissions from flaring and incinerating, H_2S and SO_2.	Alberta Energy and Utilities Board (EUB)	Flared, vented and incinerated gas volumes must be reported to the EUB. EUB Statistical Series ST-60 provides annual summary and details of flared and vented gas, solution gas conservation and progress on reductions (http://www.eub.ca/docs/products/STs/st60b_current.pdf).	The Directive sets out equipment design and operational requirements for upstream oil and gas routine and non-routine (maintenance and emergency) flaring, venting (including fugitive emissions) and incinerating. The Directive addresses well test flaring/incinerating, routine solution gas disposal by flaring/incinerating/venting and flaring/venting/incinerating at production, pipeline and processing facilities.
Alberta Sulphur Recovery Guidelines	ID 2001-03: Sulphur Recovery Guidelines for the Province of Alberta http://www.eub.ca/docs/ils/ids/pdf/id2001-03.pdf	Alberta Issued August 29, 2001 and came into effect January 1, 2002	Reduce sulphur emissions from upstream oil and gas facilities, sour gas plants, refineries and upgraders.	Sulphur as SO_2 or H_2S. Sulphur from upstream oil and gas facilities, sour gas plants, refineries and upgraders.	Alberta Energy and Utilities Board and Alberta Environment (joint ID)	Sulphur balances for sulphur recovery gas plants are reported monthly to the EUB (S-30 reports). SO_2 emissions from sour gas plants are reported to AENV. Annual report on sour gas plant sulphur recovery and de-grandfathering	The Interim Directive (ID) sets out sulphur recovery requirements and defines how the requirements apply to sour gas plants, other upstream oil and gas facilities, refineries and upgraders. The ID sets out the process for eventual de-grandfathering of older sour gas plants, as well as requirements to

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						issued by EUB (http://www.eub.ca/docs/products/STs/ST101_2005.pdf).	address unnecessary proliferation of sour gas plants
Air Emissions Management in Alberta's Electricity Generation Sector	An Emissions Management Framework for the Alberta Electricity Sector Report to Stakeholders (available at http://casahome.org/uploads/Emissions_Mgmt_Framework.pdf). The new emission standards are laid out in the document entitled: Alberta Air Emission Standards for Electricity Generation and Alberta Air Emission Guidelines for Electricity Generation (available at http://www3.gov.ab.ca/env/air/Documents/2006_Power_Plant_Emission_Standards.pdf	Alberta Report released Nov. 2003 and adopted by provincial government in March 2004. Implementation has involved passing regulations related to emission trading and Hg control and publishing updated air emission control standards for coal and gas-fired electrical generation units.	To effectively manage air emissions from the Alberta Electricity Sector on a long-term basis through a framework that establishes processes for reviewing and updating air emission control requirements.	SO_2, NO_x, PM and Hg specifically but expected co-benefits from the management of these substances for other substances. (Note: the framework is significant in terms of managing acidifying emissions since approx. 21% of the province's SO_2 emissions and 14% of the province's NO_x emissions are from the electricity sector.)	Principally AENV	The framework is implemented through regulations and individual facility approvals under the *Alberta Environmental Protection and Enhancement Act*. AENV has a number tools it uses to ensure compliance - see: http://www3.gov.ab.ca/env/protenf/compliance/pubs/FactSheet_ComplianceTools.pdf The framework establishes a regular 5 year review of overall sector performance in terms of emission levels/ reductions to determine whether the expected level of reduction/ management is being achieved. There is a "hotspots" provision	If the overall sector emission reductions and trends that were projected as a result of the framework are not being realized there is a provision to review and revise the framework.

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						to address any air quality issues related to power plant emissions and AENV has developed a "hotspots protocol" for dealing with these issues.	
Alberta Ambient Air Quality Objectives (AAQOs)	Fact Sheet available at: http://www3.gov.ab.ca/env/air/OGS/objexisting.html	Alberta Individual objectives have own effective dates	AAQOs are established to define desired environmental quality that will protect public health and ecosystems. AENV ensures that emissions from human activities in the province will be minimized and that the province's air quality continues to be better than the AAQOs now and in the future	Fact sheet lists substances	AENV	AAQOs are compared to actual air quality measurements to report on the state of Alberta's environment, special ambient air quality surveys and current air quality through the Air Quality Index	Objectives are used to establish approval conditions and can be used to assess compliance and evaluate performance. Enforcement actions can be taken.